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	Standards	Grade...
	Standard 1-Students engage in the mathematical processes of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology.	1. Solve problems from many contexts usi... (e.g., estimate, make a table, look for a pat... problem). Explain the methods for solving... [TE - 2.4.1; 5.4.1]. LM - 1.4.1; 2.4.2. [W... WP - 5.4.1. 2. Apply estimations strategies throughout... process. WP - 5.4.1. 3. Communicate mathematical ideas in a v... written, verbal, concrete, pictorial, graphic... 3.4.1;[3.4.2]. WR - 1.4.1; 1.4.2; 1.4.3; 1.4... 2.4.4; [6.4.1; 6.4.3]

ntent Standards

art for Mathemat

rade 4	Grade 8	

contexts using a variety of strategies
ok for a pattern, and simplify the
 for solving these problems.
2.4.2.   [WR - 6.4.1; 6.4.3].

 throughout the problem-solving

 ideas in a variety of ways (e.g.,
ial, graphical, algebraic). SL - 2.4.3;
; 1.4.3; 1.4.4; 2.4.1; 2.4.2; 2.4.3;

1. Formulate and solve multi-step and nonroutine problems using a variety of strategies. Generalize methods to new problem situations. LM - 1.8.1. [WR - 6.8.1; 6.8.3].

2. Select and apply appropriate estimation strategies throughout the problem-solving process.

3. Interpret and communicate mathematical ideas and logical arguments using correct mathematical terms and notations. RE - 2.8.6; 4.8.3. [SL - 3.8.1; 3.8.2]. WR - 1.8.1; 1.8.2; 1.8.3; 1.8.4; 2.8.1; 2.8.2; 2.8.3; 2.8.4; [6.8.1; 6.8.3].

4. Recognize and investigate the relevance and usefulness of mathematics through applications, both in and out of school. RE - 1.8.2.

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	Upon Graduation	
ety	1. Recognize and formulate problems from situations within and outside mathematics and apply solution strategies to those problems. TE - 2.12.1. HE - 5.12.1; 5.12.2. LM - 1.12.1. SC - 1.12.1. [WR - 6.12.1; 6.12.3].	
p-	2. Select, apply, and evaluate appropriate estimation strategies throughout the problem-solving process.	
	3. Formulate definitions, make and justify inferences, express generalizations, and communicate mathematical ideas and relationships. LM - 1.12.3.	
3.4;	RE - 1.12.1; 2.12.6. SL - 2.12.3; [3.12.1; 3.12.2]. WP - 3.12.1. WR - 1.12.1; 1.12.2; 1.12.3; 1.12.4; 2.12.1; 2.12.2; 2.12.3; 2.12.4; [6.12.1; 6.12.3].	
cs	4. Apply and translate among different representations of the same problem	

3. Communicate mathematical ideas in a v
written, verbal, concrete, pictorial, graphic
3.4.1;[3.4.2]. WR - 1.4.1; 1.4.2; 1.4.3; 1.4.
2.4.4; [6.4.1; 6.4.3].
4. Recognize and investigate the relevance
ematics through applications, both in and o
5. Select and use appropriate technology t
understanding. Appropriate technology ma
limited to, paper and pencil, calculator, and
3.4.1. LM - 4.4.1. WP - 5.4.1; 5.4.3.

Standard 2-Students demonstrate under-standing of and an ability to use numbers and operations.	1. Exhibit connections between the concre tation of a problem or concept. 2. Use the number system by counting, gro value concepts. [WP - 1.4.2]. 3. Model, explain, and use basic facts, the subtraction of whole numbers, and mental 4. Model and explain multiplication and d 5. Model and explain part/whole relations
Standard 3-Students use algebraic con-cepts, processes, and language to model and solve a variety of real-world and mathematical problems.	1. Use symbols (e.g., boxes or letters) to r situations. 2. Explore the use of variables and open s ships (e.g., missing addend). 3. Use inverse operations and other strateg tences.
Standard 4-Students demonstrate under-standing of shape and an ability to use geometry.	1. Describe, model, and classify two- and AR - 2.4.1 (VA). 2. Investigate and predict results of combi changing shapes. 3. Identify lines of symmetry, congruent a positional relationships. HE - 2.4.1.

ideas in a variety of ways (e.g.,
ial, graphical, algebraic). SL - 2.4.3;
; 1.4.3; 1.4.4; 2.4.1; 2.4.2; 2.4.3;

e relevance and usefulness of math-
oth in and out of school. RE - 1.4.2
echnology to enhance mathematical
chnology may include, but is not
culator, and computer. TE - 2.4.3;
5.4.3.

[SL - 3.8.1; 3.8.2]. WR - 1.8.1; 1.8.2; 1.8.3; 1.8.4; 2.8.1; 2.8.2; 2.8.3; 2.8.4; [6.8.1; 6.8.3].

4. Recognize and investigate the relevance and usefulness of mathematics through applications, both in and out of school. RE - 1.8.2.

5. Select and use appropriate technology to enhance mathematical understanding. Appropriate technology may include, but is not limited to, paper and pencil, calculator, computer, and data collection devices. TE - 2.8.2; 2.8.3; [5.8.1]. LM - 4.8.1.

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n the concrete and symbolic represen-

ounting, grouping and applying place

ic facts, the operations of addition and
and mental mathematics.

ation and division of whole numbers.
le relationships in everyday situations.

1. Use the four basic operations with whole numbers, fractions, decimals, and integers. [WP - 1.8.2].

2. Use mental mathematics and number sense in using order of operations, and order relations for whole numbers, fractions, decimals, and integers.

3. Use the relationships and applications of ratio, proportion, percent, and scientific notation.

4. Develop and apply number theory concepts (e.g., primes, factors and multiples) in real-world and mathematical problem situations.

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letters) to represent numbers in simple

and open sentences to express relation-

other strategies to solve number sen-

1. Understand the concepts of variable, expression and equation.

2. Represent situations and number patterns using tables, graphs, verbal rules, equations, and models. ML - 2.8.1; 3.8.1.

3. Recognize and use the general properties of operations (e.g., the distributive property).

4. Solve linear equations using concrete, numerical and algebraic methods.

5. Investigate inequalities and nonlinear relationships informally.

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y two- and three-dimensional shapes.

ts of combining, subdividing, and

congruent and similar shapes, and
2.4.1.

1. Identify, describe, construct, and compare plane and solid geometric figures. AR - 2.8.1 (VA).

2. Understand and apply geometric properties and relationships (e.g., the Pythagorean Theorem).

3. Represent geometric figures on a coordinate grid. ML - 3.8.1.

4. Explore properties and transformations of geometric figures.

5. Use geometry as a means of describing the physical world.

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RE - 1.12.1; 2.12.6. SL - 2.12.3; [3.12.1; 3.12.2]. WP - 3.12.1.
WR - 1.12.1; 1.12.2; 1.12.3; 1.12.4; 2.12.1; 2.12.2; 2.12.3; 2.12.4; [6.12.1; 6.12.3].

4. Apply and translate among different representations of the same problem situation or of the same mathematical concept. Model connections between problem situations that arise in disciplines other than mathematics.
RE - 1.12.2.

5. Select and use appropriate technology to enhance mathematical understanding. Appropriate technology may include, but is not limited to, paper and pencil, calculator, computer, and data collection devices.
TE - 2.12.3; [5.12.1].   LM - 2.12.4; 4.12.1. SC - 1.12.2.

1. Use and understand the real number system, its operations, notations, and the various subsystems. [WP - 1.12.2].
2. Use definitions and basic operations of the complex number system. [WP - 1.12.2].

1. Use algebra to represent patterns of change.
2. Use basic operations with algebraic expressions.
3. Solve algebraic equations and inequalities: linear, quadratic, exponential, logarithmic, and power.
4. Solve systems of algebraic equations and inequalities, including use of matrices.
5. Use algebraic models to solve mathematical and real-world problems.

1. Construct, interpret, and draw three-dimensional objects. AR - 2.12.1 (VA).
2. Classify figures in terms of congruence and similarity and apply these relationships.
3. Translate between synthetic and coordinate representations.
4. Deduce properties of figures using transformations, coordinates, and vectors in problem solving.
5. Apply trigonometric ratios (sine, cosine and tangent) to problem situations involving triangles.

Math

Standard 5-Students demonstrate understanding of measurable attributes and an ability to use measurement processes.	1. Estimate, measure and investigate lengt[...] area, volume, time, and temperature. 2. Develop the process of measuring and [...] measurement, including standard units (En[...] nonstandard units. SC - 1.4.2. SS - 3.4.1. 3. Apply measurement skills to everyday s[...] 4. Select and use appropriate tools and tec[...]
Standard 6-The students demonstrate understanding of and an ability to use data analysis, probability, and statistics.	1. Collect, organize, and display data. [TE[...] ML - 1.4.1. SC - 1.4.2. 2. Construct, read, and interpret displays [...] [TE - 2.4.1]. HE - 4.4.4. ML - 1.4.1. RE [...] 3. Formulate and solve problems that invo[...] ing data. SC - 1.4.1. WP - 5.4.2; 5.4.3. 4. Demonstrate basic concepts of chance ([...] simple probabilities).
Standard 7-Students demonstrate understanding of and an ability to use patterns, relations and functions.	1. Recognize, describe, extend, and create[...] RE - 2.4.4. SC - 1.4.4. 2. Represent and describe mathematical ar[...] ML - 3.4.1.

LEGEND: **This chart illustrates the "explicit" and "implicit" overla[...]**

stigate length, capacity, weight, mass,
ature.
suring and concepts related to units of
rd units (English and metric) and
SS - 3.4.1.
o everyday situations. SC - 1.4.2.
ools and techniques. [TE - 2.4.3].

1. Estimate, make, and use measurements to describe, compare, and/or contrast object in real-world situations. SS - 3.8.5.
2. Select and use appropriate units and tools to measure to a level of accuracy required in a particular setting. SC - 1.8.2.
3. Apply the concepts of perimeter, area, volume and capacity, weight and mass, angle measure, time, and temperature.
4. Demonstrate understanding of the structure and use of systems of measurement, including English and metric. SC - 1.8.2.
5. Use the concepts of rates and other derived and indirect measurements.
6. Demonstrate relationships between formulas and procedures for determining area and volume.

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y data. [TE - 2.4.1]. HE - 4.4.4.

t displays of data, including graphs.
1.4.1. RE - 2.4.4; 4.4.3. SS - 3.4.5.
ns that involve collecting and analyz-
2; 5.4.3.
of chance (e.g., equally likely events,

1. Systematically collect, organize, and describe data. [TE - 2.8.1; 2.8.2]. HE - 4.8.4. ML - 1.8.1. SC - 1.8.1. WR - 1.8.1; 2.8.1.
2. Construct, read, and interpret tables, charts, and graphs. [TE - 2.8.1; 2.8.2]. HE - 1.8.1; 1.8.5; 4.8.4; 5.8.3. ML - 3.8.1. RE - 2.8.4; 4.8.3.
3. Draw inferences, construct, and evaluate arguments based on data analysis and measures of central tendency. HE - 4.8.4. RE - 1.8.1; 1.8.2; 4.8.7. SC - 1.8.1.
4. Construct sample spaces and determine the theoretical and experimental probabilities of events.
5. Make predictions based on experimental results or probabilities. SC - 1.8.1.

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, and create a variety of patterns.

nematical and real-world relationships.

1. Describe, extend, analyze, and create a variety of patterns and functions.
2. Describe and represent relationships with tables, graphs, and rules.
3. Analyze functional relationships to explain how a change in one quantity results in a change in another.
4. Use patterns and functions to represent and solve problems. RE - 2.8.4.
5. Describe functions using graphical, numerical, physical, algebraic, and verbal models or representations.

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icit" overlaps in the standards. With "explicit" overlaps, a teacher will naturally cover both standards. With "implicit"

1. Apply concepts of indirect measurements (e.g., using similar triangles to calculate a distance).
2. Use dimensional analysis to check reasonableness of procedures.
3. Investigate systems of derived measures (e.g., km/sec, g/cm3).
4. Apply the appropriate concepts of estimates in measurement, error in measurement, tolerance, and precision. SC - 1.12.2.

1. Use curve fitting to make predictions from data.
2. Apply measures of central tendency and demonstrate understanding of the concepts of variability and correlation.
3. Select an appropriate sampling method for a given statistical analysis. SS - 3.12.5. [WP - 3.12.4].
4. Use experimental probability, theoretical probability, and simulation methods to represent and solve problems, including expected values.
5. Design a statistical experiment to study a problem and communicate the outcomes. TE - 2.12.2.
6. Describe, in general terms, the normal curve and use its properties to answer questions about sets of data that are assumed to be normally distributed.

1. Describefunctions and their inverses using grahical, mumerical, physical, algebraic, and verbal mathematical models or representations.
2. Analyze the graphs of the families of polynomial, rational, power, exponential, logarithmic, and periodic functions.
3. Analyze the effect of parameter changes on the graphs of functions and relations, including translations.
4. Model real-world phenomena with a variety of functions.
5. use graphing for parametric equations, three-dimensional equations, and recursive relations.

implicit" (in brackets ex: [RE - 1.4.2]) a teacher could easily teach both

Linda McCulloch, Superintendent

Montana Office of Public Instruction
PO Box 202501
Helena, Montana 59620-2501
www.opi.state.mt.us

Health Enhancement (black)   LM - Library Media (pink)   LT - Literature (blue)

Reading (blue)   SC - Science (red)   SS - Social Studies (gold)

Workplace Competencies (yellow)   WL - World Languages (lilac)   WR - Writing (blue)

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"implicit" (in brackets ex: [RE - 1.4.2]) a teacher could easily teach both

e)   MA - Math (green)

(gold)   SL - Speaking and Listening (blue)

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